

**ABSTRACT**

Bioprosthetic tissues are treated by immersing or otherwise contacting fixed, unfixed or partially fixed tissue with a glutaraldehyde solution that has previously been heat-treated or pH adjusted prior to its contact with the tissue. The prior heat treating or pH adjustment of the glutaraldehyde solution causes its free aldehyde concentration to decrease by about 25% or more, preferably by as much as 50%, and allows a "stabilized" glutaraldehyde solution to be obtained at the desired concentration and pH for an optimal fixation of the tissue at high or low temperature. This treatment results in a decrease in the tissue's propensity to calcify after being implanted within the body of a human or animal patient. The heat-treated or pH adjusted glutaraldehyde solution may, in some cases, also be used as a terminal sterilization solution such that the calcification-decreasing treatment with the previously treated glutaraldehyde *and* a terminal sterilization may be carried out simultaneously and/or in a single container.

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